Speaker's Task Force on Water Quality Hearing

May 29, 2019

WISCONSIN BIOMASS ENERGY COALITION

Intro

- Jessica Niekrasz
  - Vice President/Chief Administrative Officer, Clean Fuel Partners
  - President of WBEC
- Chris Lenzendorf
  - LW Strategies

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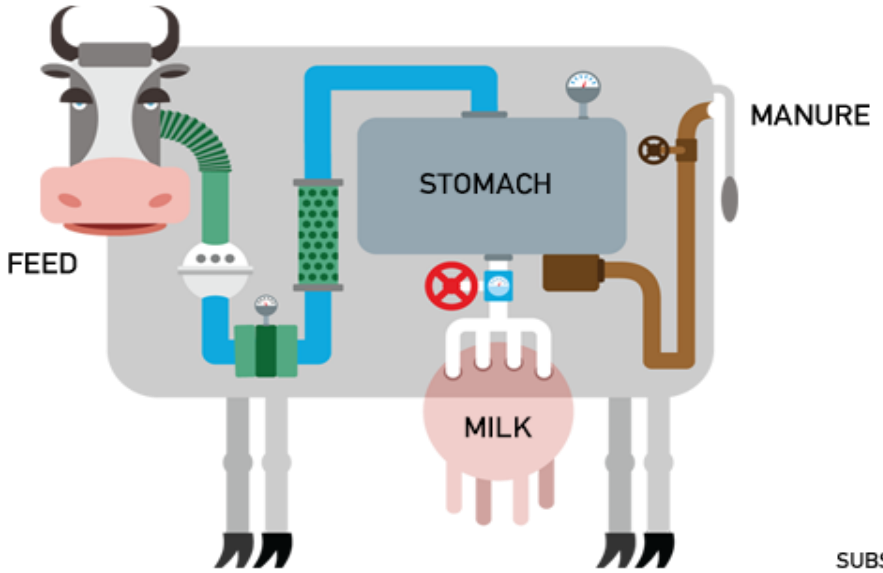
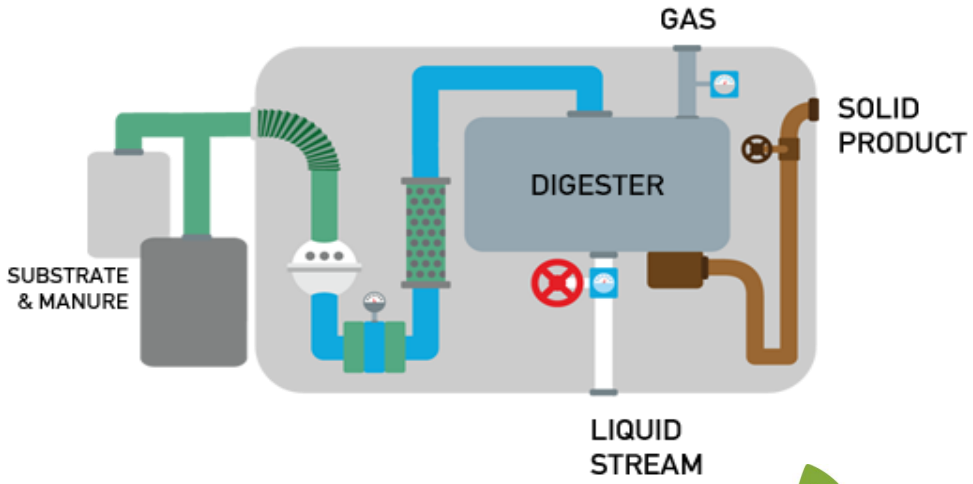
Digester 101



- Simple process - mechanical replication of a stomach.



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Digester 101

Digester Functionality

- Digesters Do:
  - Do capture methane in organic waste and make it available for combustion or compression
  - Do substantially extract hydrogen sulfide, eliminating the manure smell
  - Do make downstream nutrient recovery easier
  - Reduce pathogens in effluent
- Digesters Don’t
  - Destroy nutrients

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Digester 101

Two Economic Models

- Avoided Cost
  - Offset electricity consumption
  - Avoid gas purchase for heat
  - Bedding from separated fiber or other use
  - Savings last as long as the farm does

- Investor/Contract
  - Need to sell outputs to willing consumer (power, heat and fiber/nutrients)
  - Depends entirely on external contracts, which expire

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Digester 101

No ‘One Size Fits All’ Approach

- Each digester needs to be tailored to the dairy - feedstock, effluent management and requirements
- Farm is the “natural” customer for a digester because of feedstock
- The farm in not the natural operator due to unpredictability of machinery
- Maintenance is key
- Lack of throughput, if extended, equals less revenue

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Digester 101

Lessons Learned

- Facilities do not run themselves
- Manure is incredibly corrosive
- Better solutions for the back end outputs are needed
- This is a materials handling business
- Reduced water = reduced hauling costs
- Nutrients do not disappear

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Expanding Digesters in WI

- Digesters reliably …
  - Capture methane
  - Allow for renewable natural gas and/or generation
  - Facilitate nutrient capture and relocation
- Requires balancing objectives
  - Creating more methane CAN be achieved by adding substrate but that increases nutrients
- Goals for existing vs. future facilities
  - How do we create value of current investments?
  - How do we build more facilities that are economically feasible?
- Exciting potential in RNG and related futures beyond electricity

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Expanding Digesters in WI

Is RNG the Answer?

- Potential is compelling
  - Current electricity value = +/- $9.50/mmbtu
  - Current gross value of RNG is over $80.00/mmbtu
  - Challenges include transaction costs (up to 30%?)
- Additional financial line items are transportation/injection costs
- New facility economics dependent on input volume and siting vis-à-vis pipelines

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Water Quality

How Can Digesters Help?

- Heated processes reduce smell, pathogen count
- Contained process also captures GHG methane
  - Methane has value that can be turned into a revenue stream
- Nutrients bind to fiber/solids making movement from challenged areas easier
  - 60% binds to fiber, 40% remains in liquid portion
- Creates opportunity for businesses needing to invest in nutrient removal within a given watershed at a lower cost with similar impact

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Water Quality

Benefits of Nutrient Concentration Systems (NCS)

NCS systems process manure post digestion and concentrate nutrients, eliminate pathogens and create clean water

- Reduce trucks on the road
- Nutrients may be controlled and applied during the growing season
- Allow farms to increase herd size while minimizing effects on the environment

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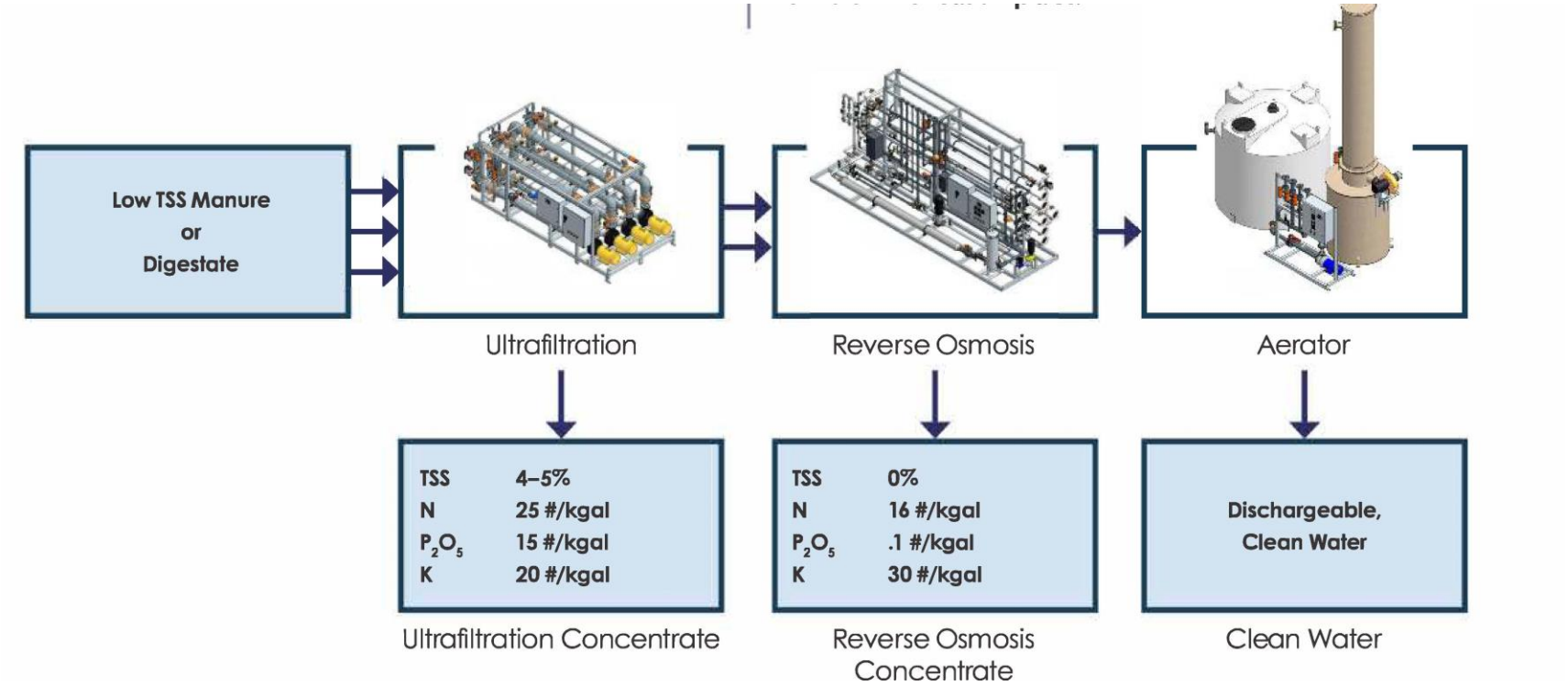
Water Quality

Nutrient Concentration Process



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About WBEC

- Founded in early 2019
- Membership organization
- Collaborate with stakeholders to champion the state's nutrient ecosystem
- Top priorities:
  - Produce renewable natural gas
  - Support agriculture and tourism industries in the process
  - Protect surface and ground water in the state

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2019-2020 Policy Goals

- Gain access to intrastate pipeline for producers to sell RNG in a national marketplace
- Accelerate R&D focused on the technology and economics of a state-wide renewable nutrient standard in fertilizer
- Develop innovate incentives to spur cost-effective solutions returning water to its natural state

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Intrastate Pipeline Access

- More gateways are needed
  - Reduction in hauling costs
  - Minimize impacts on infrastructure (roads/bridges/etc.)

- Reasonable injection costs

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Renewable Nutrient Standard

Foster the Ability of Recovered Phosphorus (P)

- Investigate P recovery technologies & state of the art practices
- Substitute recovered P for mined P in fertilizer products
- Determine economics and consumer attitudes of nutrient technologies
- Identify strategies & stakeholders for rollout (demonstration)
- Frame policy options for execution

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Innovative Incentives

eRINs (author Tim Baye, UW-Extension)

- EV buyers get a coupon with purchase of EV committing to using biogas created electric
- Coupons are pooled and utilities contract with this pool- committing to support biogas projects
- Creates a revenue stream for digester operations producing electricity, which may keep state/local investment online

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HANS CHRISTIAN HEG
COLONEL 15TH WIS. VOLS
BORN IN NORWAY
DEC. 21, 1829
FELL AT CHICKAMAUGA
SEPT. 19, 1863

THANK YOU!

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